Average precipitation and departures from the normal.

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
		Inches.		*Inches.*	*Inches.*
New England	11	2.76	82	− 0.6	− 1.4
Middle Atlantic	15	2.84	80	− 0.7	− 1.5
South Atlantic	11	3.50	92	− 0.3	− 6.8
Florida Peninsula*	8	1.94	49	− 2.0	− 6.0
East Gulf	11	3.47	97	− 0.1	− 7.3
West Gulf	10	5.01	122	+ 0.9	− 3.2
Ohio Valley and Tennessee	13	4.52	125	+ 0.9	− 0.6
Lower Lakes	10	3.38	92	− 0.2	+ 1.1
Upper Lakes	12	2.94	88	− 0.4	− 1.9
North Dakota*	9	0.86	35	− 1.6	− 2.2
Upper Mississippi Valley	15	3.79	90	− 0.4	− 3.0
Missouri Valley	12	4.36	102	+ 0.1	− 3.1
Northern slope	9	1.95	83	− 0.4	− 1.2
Middle slope	6	3.52	92	− 0.3	− 2.6
Southern slope*	7	2.15	52	− 2.0	− 4.2
Southern Plateau*	9	0.07	15	− 0.4	− 1.7
Middle Plateau*	11	0.42	34	− 0.8	− 3.8
Northern Plateau*	10	1.52	136	+ 0.4	− 1.3
North Pacific	7	1.90	73	− 0.7	− 1.0
Middle Pacific	7	0.22	20	− 0.9	− 5.6
South Pacific	4	0.01	2	− 0.6	− 4.9

*Regular Weather Bureau and selected cooperative stations.

Average relative humidity and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	75	− 3	Missouri Valley	64	− 1
Middle Atlantic	70	− 2	Northern slope	62	+ 4
South Atlantic	70	− 4	Middle slope	67	+ 6
Florida Peninsula	78	+ 2	Southern slope	57	− 4
East Gulf	69	− 2	Southern Plateau	33	+ 1
West Gulf	73	− 2	Middle Plateau	38	− 8
Ohio Valley and Tennessee	67	− 1	Northern Plateau	50	− 6
Lower Lakes	73	+ 2	North Pacific	76	0
Upper Lakes	70	− 2	Middle Pacific	67	+ 1
North Dakota	61	− 1	South Pacific	68	− 1
Upper Mississippi Valley	64	− 4			

Average cloudiness and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	6 5	+ 1.0	Missouri Valley	5.2	+ 0.1
Middle Atlantic	5.2	+ 0.2	Northern slope	4.7	− 0.8
South Atlantic	4.6	+ 0.1	Middle slope	5.4	+ 0.5
Florida Peninsula	4.2	− 0.2	Southern slope	4 9	+ 0.5
East Gulf	4.8	+ 0.1	Southern Plateau	2.7	0.0
West Gulf	4.9	+ 0.1	Middle Plateau	3.3	− 0.8
Ohio Valley and Tennessee	5.7	+ 0.7	Northern Plateau	4.1	− 1 0
Lower Lakes	5.6	+ 0.2	North Pacific	5.1	− 1.2
Upper Lakes	5.4	− 0.1	Middle Pacific	4.0	0.0
North Dakota	4.8	− 0.7	South Pacific	3.4	− 0.7
Upper Mississippi Valley	5.2	− 0.1			

Maximum wind velocities.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Atlanta, Ga.	12	60	nw.	Mount Tamalpais, Cal.	16	54	ne.
Bismarck, N. Dak.	28	50	nw.	Do.	26	68	nw.
Canton, N. Y.	10	50	w.	Do.	27	52	nw.
Chicago, Ill.	2	50	ne.	Do.	29	51	n.
Columbia, S. C.	22	52	sw.	Mount Weather, Va.	3	52	w.
Fort Worth, Tex.	21	50	sw.	North Head, Wash.	26	64	se.
Galveston, Tex.	23	50	w.	Point Reyes Light, Cal.	11	52	nw.
Kansas City, Mo.	16	50	se.	Do.	12	66	nw.
Mount Tamalpais, Cal.	1	57	nw.	Do.	13	78	nw.
Do.	2	54	nw.	Do.	14	64	nw.
Do.	3	52	nw.	Do.	22	50	nw.
Do.	4	50	nw.	Pueblo, Colo.	15	50	se.
Do.	13	50	nw.	Sheridan, Wyo.	15	54	nw.
Do.	15	56	ne.	Southeast Farallon, Cal.	13	58	nw.

RIVERS AND FLOODS.

By Prof. H. C. FRANKENFIELD, in charge River and Flood Division.

There were no floods of consequence during the month, and as a whole conditions were not materially different from those of the preceding month. In some localities excessive short-period rains resulted in sharp rises, but with a few exceptions none were important, and such damage as was reported occurred on May 8 and 9, and appears to have been confined to the rivers of eastern Kansas and western Missouri. Flood stages were barely reached at Ottawa, Kans., on the Marais des Cygnes River and at Brunswick, Mo., on the Grand River, while on the Osage River the crests were a trifle below the flood stages. The rains that caused these rises were very heavy and under ordinary circumstances would have been sufficient to cause severe floods. The failure was due to the antecedent conditions as set forth in the MONTHLY WEATHER REVIEW for April, 1910. Some growing crops along the Marais des Cygnes and upper Neosho rivers were flooded, and railroad traffic somewhat impeded for a short time. The total losses did not exceed a few thousand dollars. Warnings were issued for these rises at the proper time. As these flood waters, with the exception of those from the Neosho River, passed into the Missouri River there was also a decided rise in the latter river east of Kansas City, as well as in the Mississippi River, from the mouth of the Missouri southward, the crest reaching St. Louis on May 10, Cairo, on May 12 and 13, Memphis, on May 15, and New Orleans on May 24. They did not approximate flood stages, however, except in the Missouri River, between Glasgow and Boonville, Mo.

The Illinois River was generally above flood stage with crests of 21 feet at La Salle, Ill., on May 4, 15.6 feet at Peoria, Ill., on May 8, and 12.9 feet at Beardstown, Ill., from May 14 to 19, inclusive, flood stages being at 18, 14, and 12 feet, respectively.

There were two well-marked rises in the Ohio River below the mouth of the Great Kanawha River, but only to medium stages, and as a rule the mean stages were lower than usual for the season of the year.

Nothing of interest occurred along the Cumberland and Tennessee rivers, except a single sharp rise during the last week of the month, caused by the general and heavy rains from May 20 to 25, inclusive.

The heavy rain area also extended westward over the watersheds of the lower Arkansas and lower Red rivers, with consequent marked rises in the rivers, but no flood stages except in the upper Black River of northeastern Arkansas.

The general rains from May 7 to 9, inclusive, were quickly followed by rapid rises in the rivers of the Carolinas, Georgia, and northeastern Alabama, with some flood stages in the smaller streams of South Carolina, but no damage resulted. As a matter of fact the rises were of distinct benefit to water-power interests.

The same conditions prevailed during the third week of the month over the lower Pearl and the Pascagoula rivers of Mississippi, with corresponding advantage to the lumber interests.

Heavy general rains over eastern Texas from May 13 to 23, inclusive, were attended by the usual quick response on the part of the Trinity, Brazos, the lower Colorado, and the Guadalupe rivers, but flood stages were not reached except along the lower Guadalupe River. Following the heavy rains of the latter part of April over the upper Rio Grande watershed came a moderate flood over that portion of the river flowing through southern New Mexico, with crests of 13.3 feet at San Marcial, N. Mex., on May 21, and 15.6 feet at El Paso, Tex., from

May 5 to 7, inclusive, 2.3 feet and 0.6 foot, respectively, above flood stages. Warnings for this flood were first issued on April 27, and the crest stage at El Paso was exactly as forecast.

The rivers of California fell generally during the month, and by the end the snow had entirely disappeared from the summit of the Sierras, 15 to 30 days earlier than usual. This shortage of water was forecast nearly two months before by the official in charge of the local office of the Weather Bureau at Sacramento.

The annual rise of the Columbia River ended about the middle of the month with very moderate stages, owing to the early disappearance of the winter snows and favorable temperature conditions. At The Dalles, Oreg., the crest stage was 33.1 feet, on May 14, 6.9 feet below the flood stage, while at Portland, on the Willamette River, the crest of 19.1 feet, 4.1 feet above flood stage, occurred on May 15 and 16. The river, however, was above flood stage throughout the month, and warnings of the coming of the high water were first issued on April 27.

Hydrographs for typical points on several principal rivers are shown on Chart I. The stations selected for charting are Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.

SPECIAL PAPERS ON GENERAL METEOROLOGY.

PROF. EDWARD B. GARRIOTT. 1853--1910.

By H. E. WILLIAMS, Assistant Chief of Bureau.

In the death, at Washington, D. C., on May 13, 1910, of Prof. Edward B. Garriott, the Weather Bureau lost a most efficient and highly esteemed official. Professor Garriott was born in Lockland, Ohio, March 17, 1853, and was educated in the public schools and Washington University of St. Louis, Mo. He entered the Service as a second class private in the Signal Corps on May 18, 1874, was promoted to first class private and sergeant, and on July 1, 1888, was transferred to the civil list as meteorological clerk. He was subsequently promoted to the grades of clerk, class four, forecast official, and professor of meteorology. He served as assistant at Portland, Me., and as official in charge at Milwaukee, Buffalo, Rochester, Pittsburg, New York City, Louisville, and Chicago, and as forecast official, Chief of Forecast Division, and supervising forecaster at the Central Office. He was a member of numerous boards, author of a number of valuable publications, was several times commended by the Chief of Bureau for efficient service, and attained high rank as a forecaster.

Among his more important papers were:

Types of storms in January. 4p. 25 chts. Mo'ly Weather Rev., 1895, **23**:9.

Cold waves. Mo'ly Weather Rev., 1895, **23**:12, 334.

High areas of the north Pacific coast in September, October, and November. 1p. 3 chts. Mo'ly Weather Rev., 1895, **23**:249.

High areas north of the St. Lawrence Valley in October, November, and December. 1p. Mo'ly Weather Rev., 1895, **23**:292.

Wind-barometer table. 1p. Mo'ly Weather Rev., 1897, **25**:204.

West Indian hurricanes. W. B. Bul. "H." Washington, 1900. 69p. 7 chts. 4°.

Weather folk-lore and local weather signs. W. B. Bul. 33. Washington, 1903. 153p. 21 chts.

Storms of the Great Lakes. W. B. Bul. "K." Washington, 1903. 9p. 968 chts. 4°.

Relation of American weather to low pressure over the British Isles. Mo'ly Weather Rev., 1903, **31**:†479*a*.

Long-range weather forecasts. W. B. Bul. 35. Washington, 1904. 68p.

Long-range weather forecasts. Proc. 3d Conven. W. B. Officials. Washington. 1904. p. 38–42.

Possible extension of the period of weather forecasts. 1p. Mo'ly Weather Rev., 1906, **34**:22.

Cold waves and frost in the United States. W. B. Bul. "P." Washington, 1906. 22p. 328 chts. 4°.

Weekly weather forecasts. 1p. Mo'ly Weather Rev., 1908, **36**:435.

His evenness of temper, genial disposition, cheerful and unhesitating compliance with all official instructions and requests, and marked ability in the discharge of his duties gained for him the sincere regard of all officials and employees with whom he was brought in contact. He leaves an enviable record in the Bureau and a most grateful memory in the hearts of all of his friends.

The following resolutions were passed at a meeting of the Weather Bureau employees on duty at the Central Office in recognition of his life and labors:

Whereas, it has pleased an almighty and inscrutable Providence to remove Professor **Edward Bennett Garriott** from the activities of a long and useful career; and,

Whereas, in his death the United States Weather Bureau has suffered the loss of an official known and honored for his scholarly and scientific attainments; and,

Whereas, its members have met with an equal loss in the passing of one who had a heartfelt interest in and friendship for each, from the highest to the lowest, be it

Resolved, That we, the members of the United States Weather Bureau, do hereby extol the high qualities of our late associate as a Government official, a genial gentleman, and a faithful and loyal friend, as well as express a sense of the deep loss that is felt because of his death, not only at the Central Office but throughout the entire service; and, be it also

Resolved, That a copy of these resolutions be furnished to the bereaved wife and daughter of our late associate and friend, with expressions of our sympathy and condolence in this the hour of their sorrow,

WILLIS L. MOORE,
HENRY E. WILLIAMS,
H. C. FRANKENFIELD,
EDWARD C. EASTON,
Committee.

Washington, D. C., May 14, 1910.

RECENT ADDITIONS TO THE WEATHER BUREAU LIBRARY.

C. FITZHUGH TALMAN, Librarian.

The following have been selected from among the titles of books recently received, as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies. Most of them can be lent for a limited time to officials and employees who make application for them. Anonymous publications are indicated by a ——.

Batavia. Royal magnetical and meteorological observatory.
Report on cloud-observations at Batavia during the international cloud-year, 1896–1897. Appendix 2 to volume 30 of the observations. Utrecht. 1910. 32 p. f°.

—— Blue Hill meteorological observatory, 1885–1910. Boston. 1910. 3 p. 8°. (Reprinted from the Technology review v. 12, no. 2.)

Brockett, Paul.
Bibliography of aeronautics. Washington. 1910. xiv, 940 p. 8°. (Smithsonian miscellaneous collections, v. 55.)

Denmark. Danske meteorologiske Institut.
Nautisk-Meteorologisk Aarbog. 1909. Kjöbenhavn, 1910. xliv, 154 p. f°.

Finland. Finske meteorologiske Centralanstalt.
Meteorologisches Jahrbuch. Bd. 3, 1903. Helsingfors. 1910. ix, 117 p. f°.

Finland. Finske Meteorologiske Central-Institut.
Observations météorologiques publiées par l'Institut Météorologique central de la Société des sciences de Finlande. 1899–1900. Helsingfors. 1909. 126 p. f°.

Golitsyn, B[oris Borisovich].
Ueber die Bestimmung des Dämpfungsverhältnisses stark gedämpfter Horizontalpendeln. St. Petersburg. 1910. 21 p. 4°.

Great Britain. National physical laboratory.
Report of the observatory department, Richmond, Surrey, and of the observatory, Eskdalemuir, Langholm, Dumfriesshire, 1909. With appendices. Teddington, 1910. 62 p. 4°.

Greifswald. Meteorologische Station.
Die Ablesungen der meteorologischen Station Greifswald. . .1908. Greifswald. n. d. 50 p. 8°.
Same. 1909. Greifswald. 1910. 50 p. 8°.